



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

18

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,333	07/08/2003	Walter M. Weber	MASIMO.305A	8742
20995	7590	01/26/2005	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			KREMER, MATTHEW J	
			ART UNIT	PAPER NUMBER
			3736	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/615,333	WEBER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Matthew J Kremer	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 13 is/are allowed.
- 6) Claim(s) 1-3, 10-12, 18 and 19 is/are rejected.
- 7) Claim(s) 4-9 and 14-17 is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. ____ .   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: ____ .                                   |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 14-17 are objected to because of the following informalities. Claims 14-17, which are drawn to a system, are claimed as being dependent from claim 11, which is drawn to a method claim. It is evident from the limitations of claims 14-17, which include a configuration module, that claims 14-17 are meant to be dependent upon claim 13, which is drawn to a pulse oximetry system. For examination on the merits, claims 14-17 were considered to be dependent upon claim 13. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 recites the limitation the “method of Claim 1” which renders the claim unclear since claim 1 is an apparatus for measuring one or more blood constituents” and is not a method claim.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,919,134 to Diab. Diab teaches a method and an apparatus measure blood oxygenation in a subject that includes:

- (1) a first signal source applying a first input signal during a first time interval;
- (2) a second signal source applying a second input signal during a second time interval;
- (3) a detector detecting a first parametric signal responsive to the first input signal passing through a portion of the subject having blood therein and detecting a second parametric signal responsive to the second input signal passing through the portion of the subject, the detector generating a detector output signal responsive to the first and second parametric signals; and
- (4) a signal processor which receives the detector output signal, the signal processor demodulating the detector output signal by applying a first demodulation signal to a signal responsive to the detector output signal to generate a first output (which is considered the first demodulator output signal) and applying a second demodulation signal to the signal responsive to the detector output signal to generate a second output

signal (which is considered a second demodulator output signal), the first demodulation signal and the second demodulation signal both include at least a first component having a first frequency (both signals have the same frequency) and a first amplitude. (Abstract of Diab). Note that even though, the first amplitude of the second demodulation signal and the first amplitude of the first demodulation signal are equal, the first amplitude of the second demodulation signal of Diab is considered the second amplitude of the second demodulation signal of the present invention since they are distinct (though equal) amplitudes. Diab further teaches that a second amplitude from the first and second demodulation signals of Diab is related to the first amplitude to minimize crosstalk from the first parametric signal to the second output signal and to minimize crosstalk from the second parametric signal to the first output signal. This teaching means that the amplitudes of the first and second demodulation signals of Diab (which is considered to the first amplitude of the first demodulation signal and second amplitude of the second demodulation of the present invention) are chosen to reduce crosstalk from the first parametric signal to the second demodulator output signal and to reduce crosstalk from the second parametric signal to the first demodulator output signal since they are related to the second amplitude of the second component of the first and second demodulation signals.

Finally, Diab teaches that the first component of the second demodulation signal is in a selected phase relationship with the first component of the first demodulation signal, which implies that the first components of the first and second demodulation signal have phases.

In regard to claim 2, the limitation "wherein at least a portion of one of said first phase, said second phase, said first amplitude, and said second amplitude is determined by turning off one of said first and second signal sources and measuring the crosstalk between one of the parametric signals and the non-corresponding output signal" was not given any patentable weight since this method step does not add any further structural limitation to the claimed apparatus.

In regard to claim 3, Diab teaches a method of minimizing crosstalk between two signals generated by applying a first pulse and a second pulse to measure a parameter. The first pulse and the second pulse are applied periodically at a first repetition rate defining a period. The first pulse is generated during a first interval in each period, and the second pulse is generated during a second interval in each period. The first and second parametric signals are received by a single detector, which outputs a composite signal responsive to the first and second parametric signals. The method comprises the step of applying a first demodulation signal to the composite signal to generate a first demodulated output signal wherein the first demodulation signal comprises at least a first component having a first frequency corresponding to the first repetition rate and a first amplitude. The method further includes the step of applying a second demodulation signal to the composite signal to generate a second demodulated output signal. The second demodulation signal comprises the first component at the first frequency and the first amplitude and further comprises the second component at the second frequency and the second amplitude. The method further includes the steps of lowpass filtering the first demodulated output signal to generate a first recovered output

signal responsive to the first parametric signal; and lowpass filtering the second demodulated output signal to generate a second recovered output signal responsive to the second parametric signal. The phases of the components of the first and second demodulation signals are chosen since at least one of the first and second components of the second demodulation signal has a selected phase difference with respect to the corresponding one of the first and second components of the first demodulation signal. (column 2, line 61 to column 3, line 31 of Diab). Diab further teaches that the selection of the first demodulating signal (its amplitudes and frequency) and the second demodulating signal (its amplitudes and frequency) substantially reduces or eliminates the effects of noise in the two output signals and also substantially reduces or eliminates crosstalk between the two filtered signals.

6. Claims 10-12 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,995,858 to Kinast. In regard to claim 10, Kinast teaches the use of a demodulator which is responsive to signals of a certain phase and rejects signals in quadrature. The demodulator is applying a first demodulation signal that has several components having various frequencies and amplitudes. The demodulator has been adjusted so that only amplitudes at a particular phase are selected so that residual (and undesirable) components are reduced. (column 8, lines 19-41 of Kinast). Kinast also teaches the low-pass filtering. (Fig. 4 of Kinast). In regard to claims 11-12, Kinast teaches two demodulator signals. (column 8, lines 19-41 of Kinast). In regard to claim 18, Kinast teaches a means for applying a first demodulation signal in the form of a first

phase-sensitive demodulator and a means for adjusting a phase of said demodulation signal in the form of error correction means for correcting for residual phase errors. (claim 3 of Kinast). In regard to claim 19, Kinast teaches a means for applying a second demodulation signal in the form of a second phase-sensitive demodulator and a means for adjusting a phase of said demodulation signal in the form of error correction means for correcting for residual phase errors. (claim 3 of Kinast).

***Allowable Subject Matter***

7. Claim 13 is allowed. Note that objected claims 14-17 would be allowable if the claims were properly dependent upon claim 13, as was interpreted by the Examiner.

8. Claims 4-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is an examiner's statement of reasons for allowance. In regard to claim 4, the prior art does not teach or suggest the step of "computing said first demodulation signal from at least said first calibration output, said second calibration output, said third calibration output, and said fourth calibration output" that is combined or combinable with the other limitations of claim 4. In regard to claim 6, the prior art does not teach or suggest "wherein said first demodulation signal comprises a second demodulation component having a second amplitude and said second demodulation

component in quadrature with said first demodulation component and wherein choosing said first phase comprises choosing said first amplitude and said second amplitude" that is combined or combinable with the other limitations of claim 6. In regard to claim 7, the prior art does not teach or suggest "wherein said first demodulation signal comprises a sum of a sinusoidal component having a first amplitude and a cosinusoidal component having a second amplitude and wherein choosing said first phase comprises choosing said first amplitude and said second amplitude by using a least squares minimization of an error corresponding to said crosstalk" that is combined or combinable with the other limitations of claim 7.

In regard to claim 13, Diab teaches a pulse oximetry system which comprises a modulation signal generator. The modulation signal generator generates a first modulation signal, which comprises a first pulse, which repeats at a first repetition frequency. The modulation signal generator generates a second modulation signal comprising a second pulse, which also repeats at the first repetition frequency. The second pulse occurs at non-overlapping times with respect to the first pulse. Each of the first and second pulses comprises a plurality of components wherein a first component has a frequency corresponding to the repetition frequency and wherein a second component has a second frequency corresponding to twice the first frequency. The second component has an amplitude, which has a first predetermined relationship to an amplitude of the first component. A first transmitter emits electromagnetic energy at a first wavelength in response to the first pulse. A second transmitter emits electromagnetic energy at a second wavelength in response to the second pulse. A

detector receives electromagnetic energy at the first and second wavelengths after passing through a portion of a subject and generates a detector output signal responsive to the received electromagnetic energy. The detector output signal includes a signal component responsive to attenuation of the electromagnetic energy at the first wavelength and a signal component responsive to attenuation of the electromagnetic energy at the second wavelength. A first demodulator multiplies the detector signal by a first demodulation signal and generates a first demodulated output signal. A second demodulator multiplies the detector signal by a second demodulation signal and generates a second demodulated output signal. Diab and the prior art does not teach a configuration module to configure said first demodulation signal and said second demodulation signal to substantially diagonalize said first demodulator and said second demodulator.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Kremer whose telephone number is 571-272-4727. The examiner can normally be reached on Mon. through Fri. between 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew Kremer  
Assistant Examiner  
Art Unit 3736



ERIN F. WINAKUR  
PRIMARY EXAMINER